

# **FIELD FILTRATION AND CHILLING AS AN ALTERNATIVE TO ACIDIFICATION AND CHILLING FOR STABILIZING NUTRIENT CONCENTRATIONS DURING 30-DAY STORAGE INTERVALS.**

**Charles J. Patton**

U.S. Geological Survey, National Water Quality Laboratory, P.O. Box 25046, MS 407,  
Denver Federal Center, Denver, Colorado 80225-0046

## **Biographical Sketch of Author**

Charles Patton is a Research Chemist in the Methods Research and Development Program at the U.S. Geological Survey (USGS) National Water Quality Laboratory (NWQL) where he applies his knowledge of analytical chemistry and continuous flow analysis to solve problems related to nutrient, ion, and trace metal analyses, automated sample preparation, and field monitoring techniques. Before joining the NWQL in 1988, Patton designed and developed continuous-flow analyzer hardware and software at the Alpkem Corporation. He earned a BA in Chemistry from the College of Wooster, and MS and Ph.D. degrees in Analytical Chemistry from Michigan State University.

## **Abstract**

Recent U.S. Geological Survey (USGS) research indicates that 0.45- $\mu\text{m}$  filtration of nutrient samples at collection sites stabilizes concentrations of ammonium, nitrate plus nitrite, nitrite, and orthophosphate during 30-day storage at 4°C as effectively as sulfuric acid or mercury (II) amendment and chilling. Sulfuric acid or mercury (II) amendment and chilling was necessary to stabilize Kjeldahl nitrogen concentrations in whole-water samples. A summary of the experimental design, which included analysis of more than 20,000 samples from 15 geographically diverse locations within the United States and synthetic reference solutions, is presented. Benefits of collection-site filtration in relation to acidification, particularly for nitrate and nitrite determinations, are discussed.